Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Petition of WorldCom, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Expedited Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc., and for Expedited Arbitration	)	CC Docket No. 00-218
In the Matter of Petition of Cox Virginia Telecom, Inc., etc.	)	CC Docket No. 00-249
In the Matter of Petition of AT&T Communications of Virginia Inc., etc.	)	CC Docket No. 00-251

VERIZON VIRGINIA INC.

Testimony of Dr. James Vander Weide

July 31, 2001

VERIZON VIRGINIA INC.
DIRECT TESTIMONY OF DR. JAMES H. VANDER WEIDE
DOCKET NOS. 00-218, 00-249, 00-251
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I. INTRODUCTION
(JDPL ISSUES II-1-A; II-1-C; II-2-A; II-2-C)

Q. What is your name and business address?

A. My name is James H. Vander Weide. I am Research Professor of Finance and Economics at the Fuqua School of Business of Duke University. I am also President of Financial Strategy Associates, a firm that provides strategic and financial consulting services to clients in the electric, gas, insurance, telecommunications, and water industries. My business address is 3606 Stoneybrook Drive, Durham, North Carolina.

Q. Would you please describe your educational background and prior academic experience?

A. I graduated from Cornell University in 1966 with a Bachelor's Degree in Economics. I then attended Northwestern University where I earned a Ph.D. in Finance. In January 1972, I joined the faculty of the School of Business at Duke University and was named Assistant Professor, Associate Professor, and then Professor.

Since joining the faculty I have taught courses in corporate finance, investment management, and management of financial institutions. I have taught a graduate seminar on the theory of public utility pricing and lectured in executive development seminars on the cost of capital, financial analysis, capital budgeting, mergers and acquisitions, cash management, short-run financial planning, and competitive strategy. I have also served as Program Director of several executive education programs at the Fuqua School of Business, including the Duke Advanced Management Program, the Duke Executive Program in Telecommunications, Competitive Strategies in Telecommunications, and the Duke Program for Manager Development for managers from the former Soviet Union.

Computers and Operations Research. I have written a book titled *Managing Corporate*

I have conducted seminars and training sessions on financial analysis, financial strategy, cost of capital, cash management, depreciation policies, and short-run financial planning for a wide variety of U.S. and international companies, including ABB, Allstate, Ameritech, AT&T, Bell Atlantic, BellSouth, Carolina Power & Light, Contel, Fisons, Glaxo Wellcome, GTE, Lafarge, MidAmerican Energy, New Century Energies, Norfolk Southern, Pacific Bell Telephone, The Rank Group, Siemens, Southern New England Telephone, TRW, and Wolseley PLC.

In addition to my teaching and executive education activities, I have written research papers on such topics as portfolio management, the cost of capital, capital budgeting, the effect of regulation on the performance of public utilities, and cash management. My articles have been published in *American Economic Review*, *Financial Management*, *International Journal of Industrial Organization*, *Journal of Financial and Quantitative Analysis*, *Journal of Bank Research*, *Journal of Accounting Research*, *Journal of Cash Management*, *Management Science*, *The Journal of Portfolio Management*, *Atlantic Economic Journal*, *Journal of Economics and Business*, and *Computers and Operations Research.* I have written a book titled *Managing Corporate Liquidity: An Introduction to Working Capital Management*, and a chapter for *The Handbook of Modern Finance*, "Financial Management in the Short Run."

Q. Have you previously testified on financial or economic issues?

A. Yes. As an expert on financial and economic theory, I have testified on the cost of capital, competition, risk, incentive regulation, forward-looking economic cost, economic pricing guidelines, depreciation, accounting, valuation, and other financial and economic

issues in some 300 cases before the U.S. Congress, the Canadian Radio-Television and Telecommunications Commission, the Federal Communications Commission, the National Telecommunications and Information Administration, the Federal Energy Regulatory Commission, the public service commissions of 39 states, and the insurance commissions of five states. With respect to implementation of the Telecommunications Act of 1996, I have testified in 26 states and in Washington, D.C. on issues relating to the pricing of unbundled network elements and universal service cost studies. I have also consulted with Bell Canada, Deutsche Telekom, and Telefónica on similar issues.

Q. What is the purpose of your testimony?

A. Verizon Virginia, Inc. ("Verizon VA") asked me to make an independent appraisal of the appropriate weighted average cost of capital to be used in Verizon VA's studies of the forward-looking economic cost of providing interconnection and unbundled network elements ("UNEs").

I conclude that 12.95% is a conservative estimate of the appropriate weighted average cost of capital for use in Verizon VA's forward-looking economic cost studies.

II. FUNDAMENTAL ECONOMIC PRINCIPLES (JDPL ISSUES II-1-A; II-1-C; II-2-A; II-2-C)

A. THE COMMISSION'S FORWARD-LOOKING ECONOMIC COST STANDARD

Q. Has the Commission determined what economic principles should be used in setting rates for unbundled network elements?

A. Yes. The Commission determined the basic economic principles for setting rates for unbundled network elements in its First Report and Order, *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996* ("Local Competition Order"). In that order, the Commission decided that three fundamental economic principles should be used to set rates for unbundled network elements. First, the Commission decided that rates for unbundled network elements should be based on forward-looking economic costs, not embedded or accounting costs. Second, the Commission decided that rates for unbundled network elements should approximate the rates the incumbent LEC would be able to charge in a competitive market for unbundled network elements. Third, the Commission decided that rates for unbundled network elements should provide correct economic signals for the investment decisions of both competitive and incumbent local exchange carriers.

Q. Do the Commission's rules address the cost of capital that should be used in a forward-looking cost study?

A. Yes. Rule 51.505(b)(2) provides that a "forward-looking cost of capital shall be used in calculating the total element long-run incremental cost of an element." Forward-looking costs are the costs "that a carrier would incur in the future," and do not include embedded or historical costs. (*Local Competition Order* at ¶¶ 683, 704.)

Q. Does your independent analysis reflect the Commission's forward-looking cost principle?

A. Yes. I calculated the forward-looking cost of capital using a forward-looking cost of debt, forward-looking cost of equity, and forward-looking capital structure. In doing so, I did not consider Verizon VA's embedded, historical or accounting costs, nor did I consider Verizon VA's embedded or "book" capital structure. The cost of capital I compute is appropriate for use in determining the forward-looking cost of providing UNEs through the application of correct economic principles.

Q. Does your estimated cost of capital assume that a carrier instantaneously constructs a new network?

A. No. My 12.95% weighted cost of capital is forward-looking, but does not reflect the forward-looking assumptions some parties use when calculating other costs, such as the incremental cost of investments. Specifically, their TELRIC studies assume that a carrier instantaneously constructs an all-new ubiquitous, efficient network based on the incumbent's existing wire center locations. In my opinion, the cost of capital for such a carrier would be significantly higher than the 12.95% cost of capital produced by my study. In contrast, my cost of capital reflects the forward-looking cost of established companies that operate in the real world.

Q. Do the Commission's rules prescribe the economic purpose of forward-looking cost studies?

A. Yes. The Commission has held that forward-looking economic costs should simulate the results of a competitive market for unbundled network elements. For example, at ¶ 679 of the *Local Competition Order*, the Commission states,

> Adopting a pricing methodology based on forward-looking, economic costs best replicates, to the extent possible, the conditions of a competitive market . . . ***Because a pricing methodology based on forward-looking costs simulates the conditions in a competitive marketplace,*** it allows the requesting carrier to produce efficiently and to compete effectively, which should drive retail prices to their competitive levels. (Emphasis added.)

And at ¶ 738, the Commission states,

> In this proceeding, we are establishing pricing rules that should produce rates for monopoly elements and services ***that approximate what the incumbent LEC would be able to charge if there were a competitive market for such offerings***. (Emphasis added.)

Q. Has the Commission recently reiterated its decision that forward-looking economic costs should "simulate[s] the conditions in a competitive marketplace"?

A. Yes. In its recent ruling on Verizon Massachusetts' Section 271 Petition, the Commission reiterated that it has:

> determined that new entrants "should make their decisions whether to purchase unbundled elements...based on the relative economic costs of these options," and that such competitors would not be able to make such decisions "efficiently" unless the BOC was offering UNEs based on forward-looking economic costs. The Commission equated "efficient entry" with the availability of UNEs at forward-looking economic costs, which *"replicates...the conditions of a competitive market."* "Efficient entry" simply means that competitors seeking entry *will face the same sorts of costs they would face in a fully competitive market*, that is, TELRIC-based UNE rates. (*Memorandum, Opinion, and Order in CC Docket No. 01-9, FCC 01-130*, adopted April 16, 2001 ("Mass. 271 Order"), 42.) (Emphasis added.)

Q. Do Verizon VA's CLEC customers support the opinion that the use of the forward-looking economic cost standard replicates conditions in a competitive market for UNEs?

A. Yes. The CLECs have repeatedly stated that forward-looking costs must replicate the conditions of a competitive market. AT&T, for example, has repeatedly supported this concept in its testimony on UNEs throughout the country.

Q. Do you agree that the forward-looking economic costs in UNE cost models should approximate the costs the incumbent LEC would incur in a competitive telecommunications market?

A. Yes. However, I believe the costs Verizon VA would incur in a competitive market should be estimated on the basis of realistic assumptions about the dynamic economic environment in which Verizon VA operates. In contrast, the CLECs have generally based their cost estimates on the hypothetical assumption that the telecommunications network is instantaneously re-constructed using the most efficient technology for meeting the current demand for telecommunications service. Because it ignores the technological and demand uncertainties of the real world, the CLECs' hypothetical construct is unrelated to the way telecommunications networks are operated and constructed in reality.

Q. Does the forward-looking economic cost standard create any challenges for parties seeking to estimate UNE costs?

A. Yes. Because forward-looking economic costs are, by their nature, not observable, parties have been forced to estimate forward-looking economic costs from engineering cost models that may, or may not, reflect the incumbent LEC's future operating conditions.

Q. Does economic theory offer any suggestions for the construction of such an engineering cost model?

A. Yes. Economic theory offers at least two suggestions for the construction of such a cost model. First, such a model should seek to approximate the costs the incumbent LEC would expect to incur to construct and operate a telecommunications network for the purpose of offering UNEs. Specifically, a cost model should be based on realistic assumptions that mirror the dynamic economic environment the incumbent LEC faces in making future investment and operating decisions.

Second, the model should be based on a consistent assumption regarding the level of competition in the UNE market. It is not appropriate for CLECs to invoke the competitive market assumption in estimating the expense and amount of investment components of their cost models, for example, at the same time they assume that the market for UNEs is monopolistic when estimating the cost of capital component.

Q. Do the Commission's rules address the appropriate role for UNE rates in sending correct economic signals to participants in a competitive telecommunications market?

A. Yes. The Commission's rules clearly establish that UNE rates should send correct economic signals for the investment and operating decisions of new entrants and incumbent LECs alike. For example, in ¶ 620 of the *Local Competition Order*, the Commission states:

> In dynamic competitive markets, firms take action based . . . on the relationship between market-determined prices and forward-looking economic costs. If market prices exceed forward-looking economic costs, new competitors will enter the market. If their forward-looking economic costs exceed market prices, new competitors will not enter the market and existing competitors may decide to leave . . . New entrants should make their decisions whether to purchase unbundled elements or to build their own facilities based on the relative economic costs of these options.

Q. Does your cost of capital recommendation in this proceeding provide correct economic signals for the investment decisions of new entrants and the incumbent LECs?

A. Yes. My 12.95% weighted average cost of capital recommendation in this proceeding reflects the forward-looking risk and required return on the incumbent LEC's investment in the network facilities required to provide unbundled network elements in a competitive market. If UNE rates were based on a lower cost of capital, new entrants would find it advantageous to purchase unbundled network elements rather than to build their own facilities, even if they could provide telecommunications service more efficiently than the incumbent LEC. In addition, if rates were based on a lower cost of capital, the incumbent LEC would have no incentive to continue to invest in its network.

Q. Is your cost of capital recommendation in this proceeding appropriate for a UNE cost model that assumes incumbents will make massive sunk investments to instantaneously replace their networks, competitors have the option to immediately discontinue their use of the incumbents' networks when their own facilities are built, and UNE prices will be re-set every few years under these same assumptions?

A. No. The appropriate cost of capital would be substantially higher for a model that assumes: (1) incumbent LECs instantaneously replace their networks through massive sunk investments in network facilities; (2) competitors have the option to abandon their use of the incumbents' networks immediately after they build their own facilities; (3) UNE pricing proceedings occur every few years; and (4) at each UNE pricing proceeding, prices are based on a hypothetical cost model where the network is assumed to be replaced yet again, creating the added risk that what are today forward-looking investments will become stranded. As Dr. Jerry A. Hausman explained in his Reply Affidavit in CC Docket No. 96-98, the cost of capital required in such an extreme application of forward-looking principles may well be several times higher.

B. THE COST OF CAPITAL

Q. Does the cost of capital play any role in the Commission's guidelines for forward-looking cost studies?

A. Yes. As noted above, the Commission requires that unbundled network element cost studies be based on the forward-looking economic cost of providing interconnection and unbundled network elements. The forward-looking economic cost of providing

interconnection and unbundled network elements includes both capital costs and expenses. The capital costs, in turn, include three elements: (1) the LECs' incremental investment in the telecommunications facilities required to provide interconnection or unbundled network elements; (2) the economic depreciation on these facilities; and (3) the required rate of return, or cost of capital, associated with these facilities.

Q. How do economists define the required rate of return, or cost of capital, associated with particular investment decisions, such as the decision to invest in the building of telecommunications network facilities?

A. Economists define the required rate of return on a particular investment as the return that investors forego by making that investment instead of an alternative investment of equal risk.

Q. How does the cost of capital affect a firm's investment decisions?

A. The goal of a firm is to maximize the value of the firm. This goal can be accomplished by accepting all investments in plant and equipment with an expected rate of return greater than or equal to the cost of capital. Thus, a firm should continue to invest in plant and equipment only so long as the return on its investment is greater than or equal to its cost of capital.

Q. How does the cost of capital affect investors' willingness to invest in a company?

A. The cost of capital measures the return investors can expect on investments of comparable risk. Rational investors will not invest in a particular investment opportunity

if the expected return on that opportunity is less than the cost of capital. Thus, the expected rate of return on an investment in a company must exceed the cost of capital before investors will be willing to invest in that company.

Q. Do all investors have the same position in the firm?

A. No. Debt investors have a fixed claim on a firm's assets and income that must be paid prior to any payment to the firm's equity investors. Since the firm's equity investors have a residual claim on the firm's assets and income, equity investments are riskier than debt investments. Thus, the cost of equity exceeds the cost of debt.

Q. What is the overall or weighted average cost of capital?

A. The overall or weighted average cost of capital is a weighted average of the cost of debt and cost of equity, where the weights are the percentages of debt and equity in a firm's capital structure.

Q. Can you illustrate the calculation of the overall or weighted average cost of capital?

A. Yes. Assume that the cost of debt is 9%, the cost of equity is 15%, and the percentages of debt and equity in the firm's capital structure are 25% and 75%, respectively. Then the weighted average cost of capital is expressed by 0.25 times 9% plus 0.75 times 15%, or 13.5%.

Q. How do economists define the cost of debt component of the weighted average cost of capital?

A. Economists define the cost of debt as the market interest rate that a firm would have to pay on newly-issued debt obligations. In efficient markets, the market interest rate is also the best estimate of future interest rates. The correct economic definition of the cost of debt is thus forward-looking and market-oriented.

Q. How do economists define the cost of equity component of the weighted average cost of capital?

A. Economists define the cost of equity as the return investors expect to receive on alternative equity investments of comparable risk. Since the return on an equity investment of comparable risk is not fixed by contract, the cost of equity is more difficult to measure than the cost of debt. There is agreement, however, as I have already noted, that the cost of equity is greater than the cost of debt. There is also agreement among economists that the cost of equity, like the cost of debt, is both forward-looking and market-based.

Q. What approaches do economists employ to obtain numerical estimates of the cost of equity?

A. Economists generally use market models such as the Discounted Cash Flow ("DCF") Model to estimate a firm's cost of equity. The DCF Model is based on the assumption that the market price of a firm's stock is equal to the present value of the stream of cash flows that investors expect to receive from owning the stock. The cost of equity in the

DCF Model is that discount rate which equates the firm's stock price to the present value of the future stream of cash flows investors expect from owning the stock.

Q. How do economists measure the percentages of debt and equity in a firm's capital structure?

A. Economists measure the percentages of debt and equity in a firm's capital structure by first calculating the market value of the firm's debt and the market value of its equity. Economists then calculate the percentage of debt by the ratio of the market value of debt to the combined market value of debt and equity, and the percentage of equity by the ratio of the market value of equity to the combined market values of debt and equity. For example, if a firm's debt has a market value of $25 million and its equity has a market value of $75 million, then its total market capitalization is $100 million, and its capital structure contains 25% debt and 75% equity.

Q. Why do economists measure a firm's capital structure in terms of the market values of its debt and equity?

A. Economists measure a firm's capital structure in terms of the market values of its debt and equity because that is the best measure of the amounts of debt and equity that investors have invested in the company on a going-forward basis. Furthermore, economists generally assume that the goal of management is to maximize the value of the firm, where the value of the firm is the sum of the market value of the firm's debt and equity. Only by measuring a firm's capital structure in terms of market values can its managers choose a financing strategy that maximizes the value of the firm.

Q. Is the economic definition of the cost of capital, which focuses on the market values of debt and equity, widely accepted in other contexts by capital market participants?

A. Yes. Homeowners measure the value of their homes in terms of market values, not historical cost or book values. Investors measure the return and risk on their portfolios in terms of market values, not book values. Companies use a market value definition of the cost of capital to make entry, investment, and innovation decisions.

Q. How do investors measure the rate of return on their investment portfolios?

A. Investors, like economists, measure the rate of return on their investment portfolios in terms of the market values of the debt and equity in their portfolios. Suppose an investor has a portfolio that has a market value of $100,000 at the beginning of 2000. Further suppose that the value of the portfolio at the end of 2000 is $112,000, and that the investor earns interest and dividends of $3,000 during the course of 2000. Then the investor's rate of return in 2000 is 15% [(112 – 100)/100 + 3/100 = 15%]. In making this calculation, I assumed that dividends and interest were not reinvested in the portfolio during the year.

Q. Suppose the investor in your previous example purchased his portfolio in 1980 at a cost of $20,000. Does the historical cost of investment in 1980 have any effect on either the investor's earned or required rate of return in 2000?

A. No. The fact that the investor purchased the portfolio in 1980 for $20,000 has no bearing on either the investor's earned or required rate of return in 2000. Thus, the historical or embedded cost of the investment is irrelevant to the calculation of the rate of return. Investors calculate their rate of return based on market values, not book values.

Q. Your example clearly demonstrates that the investor's earned rate of return in 2000 depends on the $100,000 market value of the portfolio at the beginning of 2000, not on the $20,000 historical cost, or book value, of the portfolio in 1980. Do investors measure the *required* rate of return for 2001 in terms of the market value or the book value of their portfolio at the beginning of 2001?

A. Investors measure their required rate of return for 2001 in terms of market values, not book values. Suppose that the investor's required rate of return for 2001 is 15%. Since the value of the portfolio at the beginning of 2001 is $112,000, the investor will require a dollar return of $16,800 in 2001 (15% x $112,000 = $16,800) including dividends, interest, and capital gains. If the investor expects a return less than $16,800, he should sell this portfolio and invest his capital in another portfolio that has an expected rate of return of at least 15%.

Q. If a group of investors were to construct a portfolio that consisted of all of a firm's debt and equity, how would they measure the required return on their investment?

A. These investors would measure their required return by calculating a weighted average of their required returns on the debt and equity portions of the portfolio, where the weights are measured in terms of market values, not book values. For example, if a firm's debt has a market value of $25 million, its equity has a market value of $75 million, the market interest rate on corporate debt of similar risk is 9%, and the market required return on equity of similar risk is 15%, then the required rate of return on a $100 million portfolio containing all of the firm's debt and equity securities would be 13.5% (.25 x 9% + .75 x 15% = 13.5%).

Thus, the investors' required rate of return from an investment in the company is the same as the company's weighted average cost of capital, where both the required rate of return and the weighted average cost of capital are measured in terms of market value weights.

Q. Is the economic definition of the average cost of capital consistent with the way competitive firms determine the required rate of return on investment decisions?

A. Yes. Managers also use a market value definition of the weighted average cost of capital in making investment decisions. From the manager's perspective, the firm's cost of capital is equal to the return investors can earn on the market value of other investments of the same risk. Rational managers, like rational investors, will not commit resources to investments in new markets or technologies unless the expected return on the market value of these investments in new markets or technologies is greater than or equal to the

firm's cost of capital, measured on a market value basis, for projects with the same degree of risk.

Q. Does the economic logic behind the definition of the cost of capital have any implications for competitive entry in the local exchange market in Virginia?

A. Yes. If the Commission wants to encourage efficient facilities-based competitive entry in the market for local exchange services, the cost of capital input in Verizon VA's forward-looking cost studies must be at least as large as the return those potential facilities-based competitors can earn on other investments of the same risk. If potential competitors can lease local exchange facilities from Verizon VA at rates that include a ten percent rate of return on investment, for example, they will have no incentive to invest in their own facilities if they can earn returns greater than ten percent on other investments of comparable risk. In short, it would make more sense for those competitors to lease the undervalued unbundled network elements from Verizon VA than to build their own facilities. To provide correct incentives for entry into local exchange markets, the Commission should measure Verizon VA's cost of capital in the same way that potential competitors measure their own costs of capital.

Q. Does the economic definition of the cost of capital have any implications for the policy goal of encouraging investment and innovation in telecommunications services?

A. Yes. The Commission should likewise use a market definition of the cost of capital if it wishes to promote efficient investment and innovation in telecommunications services.

In competitive markets, the incumbent and its competitors can only be encouraged to invest in new technologies, products, and services if the rate of return they can earn on the market value of their investments exceeds the rate of return they could earn on the market value of other investments of the same risk.

Q. Why do investors measure the return on their investment portfolios using market value weights rather than book value weights?

A. Investors measure the return on their investment portfolios using market value weights because market value weights are the best measure of the amounts the investors currently have invested in each security in the portfolio. From the investor's point of view, the historical cost or book value of his investment is entirely irrelevant to the current risk and return on his portfolio because if he were to sell his investment, he would receive only its market value and not the historical cost. Thus, the return can only be measured in terms of market values.

Q. Is the economic definition of the average cost of capital consistent with regulators' traditional definition of the average cost of capital?

A. No. As noted above, the economic definition of the average cost of capital is based on the market costs of debt and equity, the market value percentages of debt and equity in a company's capital structure, and the future expected risk of investing in the company. Regulators, in contrast, have traditionally defined the average cost of capital using the embedded cost of debt, the book values of debt and equity in a company's capital

structure, and the risk of investing in a franchised provider of telecommunications services.

Q. What is the difference between the market cost of debt and a company's embedded cost of debt?

A. The market cost of debt is the rate of interest a company would have to pay if it issued debt under today's market conditions. The embedded cost of debt is the company's total interest expense divided by the total book value of its debt. Thus, the embedded cost of debt is an average of the interest rates the company has paid in the past to issue debt securities. This calculation of the embedded cost of debt, however, provides no basis for measuring the market cost of debt.

Q. What is the difference between the market value and the book value of a company's debt?

A. The market value of a company's debt represents the current price in the capital markets of the company's debt obligations. The book value of a company's debt is the historical face value of its debt adjusted for the accounting amortization of premiums and discounts. The market value of a company's debt is approximately equal to the book value of its debt when market interest rates are approximately equal to the average interest rate of the company's previous debt issuances.

Q. What is the difference between the market value and the book value of a company's equity?

A. The market value of a company's equity is simply the market price of the company's stock times the number of shares outstanding. The book value of equity is more complex: it represents the sum of paid-in capital and retained earnings, where paid-in capital represents the amount of capital a firm has historically obtained from stock issuances, and retained earnings represent the cumulative earnings over the life of the company that have not been paid out as dividends. In addition, the book value of a company's equity is adjusted periodically for accounting events such as changes in accounting rules and regulations, write-offs, and extraordinary events.

Q. Does the book value of a company's equity reflect the historical cost of its assets?

A. Yes. The book value of a company's equity is defined as the book value of a company's assets minus the book value of the company's debt:

Book Value of Equity = Book Value of Assets - Book Value of Debt

Since the book value of a company's assets, in turn, is equal to the historical cost of a company's assets minus accumulated depreciation, the book value of a company's equity can also be stated as the historical cost of a company's assets, minus the accumulated book depreciation on these assets, minus the book value of a company's debt:

Book Value of Equity = Historical Cost of Assets – Accumulated Book Depreciation – Book Value of Debt

Thus, the book value of a company's equity reflects the historical cost of the company's assets.

Q. Why have state and federal regulators defined the average cost of capital in terms of embedded costs and book values rather than forward-looking costs and market values?

A. State and federal regulators traditionally have defined a company's average cost of capital in terms of embedded costs and book values because these concepts were consistent with the regulators' accounting model of the firm. Economists, in contrast, generally employ an economic model of the firm in which forward-looking costs and market values are the relevant standards.

Q. Is the traditional state and federal regulatory definition of the average cost of capital consistent with the economic principles underlying a forward-looking cost study?

A. No. As I have already noted, the economic principles underlying a forward-looking economic cost study require that the average cost of capital be calculated using a market interest rate, a market value capital structure, and a cost of equity that measures the return investors require in competitive markets on other investments of the same risk. In contrast, the regulatory definition of the weighted average cost of capital is based on an embedded interest rate, a book value capital structure, and a cost of equity that measures the return investors require in markets that are at least partially protected from competition. The regulatory definition of the weighted average cost of capital is inconsistent with the economic principle that economic costs are forward-looking and market-based, not backward-looking and accounting-based.

Q. Is it reasonable for the cost of capital input in Verizon VA's UNE cost studies to exceed the last authorized rate of return for Verizon VA's regulated operations?

A. Yes. Recall that Verizon VA's retail rates under rate of return regulation were based on historical cost, rather than forward-looking economic cost. Thus, the cost of capital input under traditional rate of return regulation was based on a book value capital structure that reflected the historical cost of Verizon VA's assets, an embedded cost of debt, and a cost of equity appropriate to a regulated company serving a franchised area prior to the passage of the Act.

In contrast, the Commission has clearly stated that the cost of capital input in UNE cost studies must be based on the principle of forward-looking economic costs. Unlike the historically-oriented cost of capital used in traditional rate of return regulation, the forward-looking economic cost of capital must necessarily be based on the market values of debt and equity in the company's capital structure, the market cost of debt, and the cost of equity for a company operating in a competitive marketplace.

Given the significant differences between historical-cost ratemaking principles and forward-looking economic cost ratemaking principles, it is not surprising that the forward-looking economic cost of capital can be significantly higher than the traditional regulated rate of return cost of capital. Indeed, the appropriate cost of capital input in Verizon VA's UNE cost studies exceeds the last authorized rate of return because: (1) Verizon's market value capital structure contains less debt and more equity than the historical cost, book value capital structure used under rate of return regulation; and (2) the cost of equity for a company operating in a competitive marketplace exceeds the cost of equity for a company operating in a franchised marketplace.

Q. In light of your previous answer, how do you interpret the Commission's statement in ¶ 702 of the *Local Competition Order* that currently allowed rates of return at the federal or state level can be a useful starting point for the determination of the cost of capital input in UNE cost studies?

A. Paragraph 702 only states that currently allowed rates of return may be a useful starting point for measuring the appropriate cost of capital in UNE cost studies. As the Commission stated, parties may demonstrate "to a state commission that either a higher or lower level of cost of capital is warranted, without that commission conducting a rate-of-return or other rate based proceeding." The purpose of my testimony is to demonstrate to the Commission why the cost of capital used to establish rates in this proceeding must be higher than the currently authorized regulatory returns.

Q. Are there any grounds for recommending that this Commission use a higher cost of capital input than the currently authorized rate of return at the federal or state level?

A. Yes. An appropriate ground for recommending a cost of capital that is higher than the last federal or state authorized return is that the last authorized return was established prior to the passage of both the Act and the adoption of the *Local Competition Order*, which mandates that rates for UNEs replicate conditions in a competitive market.

Q. Is it possible that ¶ 702 means that parties can use a different standard — such as a monopoly assumption — for estimating the cost of capital than the competitive standard that the Commission requires them to use for estimating the other components of the forward-looking economic cost of providing UNEs?

A. No. It would not make sense for the cost of capital to be measured in a manner that is inconsistent with the TELRIC principle that UNE "rates should approximate what the incumbent LEC would be able to charge if there were a competitive market for such offerings." If the standard for estimating the cost of capital were different from the competitive standard for estimating the expense and investment components, then UNE rates could not possibly "approximate what the incumbent LEC would be able to charge if there were a competitive market for such offerings." Furthermore, UNE rates so established would not provide correct economic signals for entry decisions by CLECs or investment decisions by incumbents. Indeed, CLECs would never invest in their own facilities if they could provide local service by leasing UNEs at rates that are lower than the rates that "approximate conditions in a competitive market." The need to provide correct economic signals is the very purpose for the forward-looking economic cost standard.

Q. In the Mass. 271 order, the Commission notes that "AT&T questions whether there is any reason to believe that offering UNEs on a wholesale basis, where Verizon faces no competition, is riskier than offering retail service, where it now has competition." [Mass. 271 Order at ¶ 38.] Is there any basis for AT&T's argument that the cost of capital used in setting UNE rates should be lower than the cost of capital used in setting retail rates on the theory that the risk is lower in providing unbundled network elements?

A. No. First, AT&T's argument is based on a false premise. As I explain in Section III, the risk of providing unbundled network elements is greater than the risk of providing local exchange service.

Second, AT&T's argument is intellectually dishonest. State regulatory commissions are required to determine the cost of capital to be used in forward-looking cost studies that, according to this Commission, will produce UNE rates that replicate the costs competitors would face "in a fully competitive market." [Mass. 271 Order at ¶ 42.] It is wrong, therefore, to suggest that capital costs should reflect a market where, in AT&T's words, "Verizon faces no competition." There is simply no basis for AT&T's attempt to pick and choose which forward-looking costs should reflect a competitive market and which should not. To be consistent in determining the inputs to the forward-looking cost studies, the cost of capital ***must*** also reflect a fully competitive market.

Q. In sum, then, what is the proper definition of the average cost of capital for use in Verizon VA's forward-looking cost studies?

A. The Act removes all barriers to entry in the local exchange market and opens the market to full competition. In a competitive market for local exchange service, forward-looking economic cost is the appropriate cost benchmark for forward-looking cost studies. Furthermore, the Commission has determined that forward-looking economic costs should approximate the costs the incumbent LEC would incur in a competitive market for UNEs. Thus, for use in Verizon VA's forward-looking economic cost studies, the average cost of capital should be defined in terms of market interest rates, the market values of debt and equity in a company's capital structure, and investors' expectations regarding the future risk of investing in the company in a competitive environment. This is the only definition of the average cost of capital that is consistent with the underlying assumptions of Verizon VA's forward-looking cost studies.